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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte INGRID SCHEMMEL,
STEFAN MARSONER, and
WERNER LIEBFAHRT

Appeal 2009-002356
Application 10/830,003
Technology Center 1700

Decided:¹ July 10, 2009

Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and
ADRIENE LEPIANE HANLON, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the Decided Date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-17 and 28-39. We have jurisdiction under 35 U.S.C. § 6.

We REVERSE.

STATEMENT OF THE CASE

Appellants claim a metal material such as a steel article having a particular composition which includes molybdenum and tungsten in the weight ranges recited in representative claim 1, which reads as follows:

1. A cold work steel article, wherein the article comprises a material having a composition, in % by weight, of:

Carbon	from more than about 0.6 to less than about 1.0
Silicon	from more than about 0.3 to less than about 0.85
Manganese	from more than about 0.2 to less than about 1.5
Phosphorus	from 0 to about 0.03
Sulfur	from 0 to less than about 0.5
Chromium	from more than about 4.0 to less than about 6.2
Molybdenum	from more than about 1.9 to less than about 3.8
Nickel	from 0 to less than about 0.9
Vanadium	from more than about 1.0 to less than about 2.9
Tungsten	from more than about 1.8 to less than about 3.4
Copper	from 0 to less than about 0.7
Cobalt	from more than about 3.8 to less than about 5.8
Aluminum	from 0 to less than about 0.065
Nitrogen	from 0 to less than about 0.2
Oxygen	from 0 to about 0.012

the balance being iron and accompanying and impurity elements due to smelting, the material produced by a powder metallurgical process.

The Examiner rejects all claims under 35 U.S.C. § 103(a) as being unpatentable over JP 2003-055747, published 26 February 2003, to Takashi et al. (Takashi).²

ISSUE

Have Appellants shown error in the Examiner's conclusion that it would have been obvious for one with ordinary skill in the art to provide the metal composition of Takashi with concentrations of molybdenum and tungsten in the respective ranges defined by claim 1?

FINDINGS OF FACT

Takashi discloses a steel alloy comprising "a composition containing, by weight, 0.8 to 2.5% C, 3 to 8% Cr, 1 to 10% Mo, 1 to 20% W, 1 to 7% V, $\leq 15\%$ Co, $\leq 1\%$ Si and $\leq 1\%$ Mn, where the W equivalent ($2\text{Mo} + \text{W}$) simultaneously satisfies 15 to 30%, and a balance of Fe with inevitable impurities." Takashi translation 2, claim 2; *see also* ¶¶ [0006], [0028]. This composition contains 1 to 10 weight percent Mo (molybdenum) and 1 to 20 weight percent W (tungsten), where the W equivalent ($2\text{Mo} + \text{W}$) simultaneously satisfies 15 to 30 weight percent. *Id.*; *see also*, ¶ [0009].

In contrast to the 15 weight percent minimum W equivalent ($2\text{Mo} + \text{W}$) disclosed by Takashi, appealed claim 1 defines a maximum of less than about 11 weight percent (i.e., (2x less than about 3.8) + less than about 3.4). (*See App. Br. 14, last full para.*).

PRINCIPLES OF LAW

"[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning

² Our understanding of the applied reference is based on the translation dated March 2007 prepared for the U.S. PTO by Schreiber Translations, Inc.

with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), *quoted with approval in KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417-18 (2007).

"[W]hile it may ordinarily be the case that the determination of optimum values for the parameters of a prior art process would be at least prima facie obvious, that conclusion depends upon what the prior art discloses with respect to those parameters. Where, as here, the prior art disclosure suggests the outer limits of the range of suitable values, and that the optimum resides within that range, and where there are indications elsewhere that in fact the optimum should be sought within that range, the determination of optimum values outside that range may not be obvious." *In re Sebek*, 465 F.2d 904, 907 (CCPA 1972).

ANALYSIS

In support of an obviousness conclusion, the Examiner finds that "[t]he composition ranges of the elements present in the sintered tool steel of [Takashi] overlap the claimed ranges of the elements respectively" and that "[t]he overlapping range establishes a prima facie case of obviousness." (Ans. 3). This finding is incorrect. As indicated above, the maximum W equivalent defined by claim 1 is less than 11 weight percent which is over 25% below the 15 weight percent minimum disclosed by Takashi. Therefore, with respect to W equivalents, the ranges defined by claim 1 and disclosed by Takashi do not overlap.

As an apparently alternative position, the Examiner states that "discovering an optimum value of a result-effective variable involves only routine skill in the art" and concludes that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to have

optimized the total amount of Mo and W as defined by the formula of $(2\text{Mo} + \text{W}) = 15\text{-}30\%$ in the tool steel [of Takashi] for the desired contents of the Mo and W carbides and desired final properties of the tool steel." (Ans. ¶ bridging 5-6.)

The deficiency of this obviousness conclusion is that it is not supported by articulated reasoning with rational underpinning. In the absence of such reasoning, no basis exists for concluding that an artisan would have reduced the 15 weight percent minimum of Takashi's W equivalents by more than 25 percent in order to achieve molybdenum and tungsten values within the respective ranges defined by claim 1. Stated differently, the Examiner has provided this record with no rational basis for concluding that optimization of Takashi's 15-30 weight percent range of W equivalents would have resulted in values more than 25% below this range as required by claim 1.

CONCLUSIONS OF LAW

Appellants have shown error in the Examiner's conclusion that it would have been obvious for one with ordinary skill in the art to provide the metal composition of Takashi with concentrations of molybdenum and tungsten in the respective ranges defined by claim 1.

Therefore, we cannot sustain the Examiner's § 103 rejection of all appealed claims as being unpatentable over Takashi.

Appeal 2009-002356
Application 10/830,003

ORDER

The decision of the Examiner is reversed.

REVERSED

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